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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,217

09/22/2006

Helmut Pradel

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EXAMINER

SAINT SURIN, JACQUES M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/554,217	Applicant(s) PRADEL, HELMUT	
	Examiner J M. SAINT SURIN	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/24/05, 09/22/06 and 10/22/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/05, 10/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings filed on 10/24/05 are acceptable by the Examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayani (US Patent 5,938,334).

Regarding claims 1 and 4, as depicted in Fig. 3, Kayani discloses a method (see: Fig. 3 and col. 3, lines 14-15) for determining the limpness of sheet material (10), comprising the steps:

irradiating (24) the sheet material (10) with sound waves (26) (col. 3, lines 14-17);

measuring (30) the sound waves emanating from the irradiated sheet material (10) (col. 3, lines 18-19);

determining the limpness of the sheet material on the basis of the measured sound waves (col. 4, lines 42-44), wherein both sound waves reflected by the sheet

material and those transmitted by the sheet material are measured. As described above, Kayani discloses a sound source (24) that emits a sound signal (26) to the bank note (10). The sound signal is partly reflected (28) to a detector (30) and partly absorbed. The reflected and absorbed portions of the acoustic signal are measured to determine the limpness of the note (col. 3, lines 14-23, col. 4, lines 42-44). In another embodiment, Kayani discloses the light source 12 emits a light beam 14 which is partly transmitted (18) and partly reflected (16). The reflected and transmitted portions of the signals are measured and compared in order to determine the limpness of the note (col. 2, lines 61-col. 3, line 13). Kayani does not particularly teach forming a mathematical ratio of the reflected and transmitted sound waves. However, it would have been obvious to one of the ordinary skill in the art to take the ratio of Kayani's reflected signal and the transmitted or absorbed signal in determining the limpness of the note. The ordinary skilled artisan would have known that taking ratio of different measurements for the note is a well known approach for evaluating the strength of the different portions of the signal to determine the limpness of the note ion a reliable manner.

Regarding claim 4, Kayani shows in Fig. 3 the transmitted or absorbed wave to the sheet 10 and the reflected signal and both are taken in consideration when for determining the limpness.

Regarding claim 2, Kayani discloses the method according to claim 1, wherein the measuring of the reflected and the transmitted sound waves is taken from a

common place on the sheet material (Fig. 3 shows a common place on the note 10 where the transmitted signal is reflected and absorbed).

Regarding claim 3, Kayani discloses the method according to claim 1, wherein a measure for a property of the sheet material other than the limpness is determined and is taken into consideration when determining the limpness (col. 3, lines 52-60).

Regarding claim 8, Kayani discloses wherein defective areas of the sheet material are determined and these areas are not taken into consideration when determining the limpness(Kayani discloses a measurement of the heat capacity of the note. In other words, the note's ability to dissipate heat is a function of the notes limpness and wear, see: col. 3, lines 52-54). Clearly, the wear is not taken in consideration when determining the limpness.

5. Claims 5, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayani (US Patent 5,938,334) in view of Wunderer (US Patent 6,745,628).

Regarding claims 5 and 12, Kayani does not disclose the frequency spectrum of sound waves is measured and taken into consideration when determining the limpness. Wunderer discloses the banknote is irradiated by with broad-band ultrasonic waves having a broad frequency spectrum (col. 6, lines 46-48). Regarding claim 12, Wunderer discloses the receiving device may also be one that detects ultrasonic waves of a great variety of frequencies in a broad band and thus records a broad transmission spectrum (col. 3, lines 4-6). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Kayani the techniques of

Wunderer because it would provide a transmission of broad-band ultrasonic waves which is determined for a plurality of discrete frequencies and used for evaluation wherein the differences of the transmission at the different frequencies are then used to determine a criterion for evaluating the quality, in particular the porosity, of the irradiated material thereby, making the above combination more effective and reliable.

Regarding claim 10, it is similar in scope with claim 1 and therefore, it is rejected for the reasons set forth for that claim. Furthermore, Fig. 2 shows the transmitted portion 18 passing through the note 10 and detector 22 can be used to measure the transmitted signal and detector 20 for measuring the reflected signal. Although Kayani discloses determining the limpness of the note from the measured portion of the acoustic wave at one or more locations, it does not specifically disclose an evaluation unit. Wunderer depicts an evaluation unit 10 in Fig. 1. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Kayani the evaluation device of Wunderer because it would accept data from receiver control 8 and evaluate them. Moreover, one of the ordinary skill in the art would be motivated to recognize by taking the ratio of Kayani's reflected signal and the transmitted or absorbed signal, the evaluation device of Wunderer would be suitable to determine effectively the limpness of the note. Thus, the ordinary skilled artisan would have known that taking ratio of different measurements for the note is a well known approach for using an evaluation device for evaluating the strength of the different portions of the signal to determine in a reliable manner.

Regarding claim 11, Kayani shows in Fig. 3 the transmitted or absorbed wave to the sheet 10 and the reflected signal and both are taken in consideration when for determining the limpness.

Regarding claim 14, Kayani discloses the method according to claim 1, wherein a measure for a property of the sheet material other than the limpness is determined and is taken into consideration when determining the limpness (col. 3, lines 52-60).

6. Claims 6-7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayani (US Patent 5,938,334) in view of Deka (US Patent 4,976,150).

Regarding claims 6-7 and 13, Kayani does not disclose wherein the transit time of sound waves in the sheet material is measured and taken into consideration when determining the limpness. Deka discloses the time from initiation of the ultrasonic burst to receipt of a signal from the material under test signal can be accounted for, as follows: (1) time for the ultrasound to travel from transducer assembly 16 to the sheet 10a, (2) time for the ultrasound to travel from the point of entry to the sheet to the point of emergence from the sheet, and (3) time for the radiated ultrasound to travel from the sheet to the second transducer assembly illustrated in FIG. 2A by the numeral 20.

Thus, a measurement of time between transmission and reception of the ultrasound, minus transport time through air gaps is the propagation time of the ultrasound in the sheet (see: col. 10, lines 3-14). Deka further teaches the composite may be moved by a scanner (not shown) in the X-Y coordinate directions as indicated by arrows 92.

The detector circuitry records the level of ultrasound corresponding to the portion of composite currently in the sound path. If the composite contains a defect, a change in

the level of ultrasound is detected. The location, size and severity of each defect can be indicated. The deflector 79 serves to improve the signal to noise ratio and resolution of all detectable defects by concentrating the ultrasound (col. 12, lines 45-58) to meet the limitations of the deflection measurement of claim 7. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Kayani the transit time measurement of Deka because it teaches by accurately measuring the distance between the points of entry and emergence, the velocity of the ultrasound may then be determined by dividing distance by propagation time.

Therefore, paper strength may be calculated from the velocity data in a reliable manner by attaining the end of better yield and quality of product to make the above combination more effective.

7. Claims 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayani (US Patent 5,938,334) in view of Bolomey (US Patent 6,424,597).

Regarding claims 9 and 15, Kayani does not disclose at least one of the source of sound and the measuring device is in contact with the sheet material. Bolomey discloses an ultrasonic contact transducer with multiple elements, each element being an ultrasound transmitter and/or receiver (col. 3, lines 27-29). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Kayani the contact transducer of Bolomey because it would provide a transducer being designed to be moved with respect to an object to be inspected and with a deformable emitting surface designed to come into contact with the surface of this object, and from which ultrasounds are emitted to the object. Furthermore, the transducer is then

capable of operating independently since it adapts to the real configuration of the inspection made by measurement, analysis and compensation of the deformation of the emitting surface of this transducer thereby, making the above combination more effective.

8. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayani (US Patent 5,938,334) in view of Wunderer (US Patent 4,612,807).

Regarding claims 16-17, Kayani does not disclose wherein the property of the sheet material other than the limpness is determined as the weight per unit area of the sheet material. Wunderer ('807) discloses determining the local weight per unit area of sheet-like material, for example, paper, in which the sheet-like material is exposed to sound waves from a sound transmitter. The portion of sound transmitted and/or reflected by the sheet-like material is measured by aid of a receiver and the weight per unit area determined from the measuring signal (see: abstract). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Kayani the techniques of Wunderer ('807) because it would arrange all elements involved in measuring, such as the transmitter, receiver and material to be measured, in such a way that the portions of sound reflected on these elements are faded out of the path of rays between the transmitter and the receiver and at the same time the faded out portions of sound are prevented from returning to the original path of the rays and hitting the transmitter and/or receiver. In addition, by arranging the material to be measured, not parallel, but at an angle to the transmitter and receiver and eliminating the sound reflected on the material to be measured by a sound-absorbing material .

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Thus, when the direction of a diffracted wave coincides with the direction of reflection, the efficiency of the sound energy diffracted away from the impinging ray is increased to ensure a reliable measurement.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J M. SAINT SURIN whose telephone number is (571)272-2206. The examiner can normally be reached on Mondays to Fridays between 9:30 A.M and 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron L. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jacques M SAINT SURIN/
Examiner, Art Unit 2856
March 30, 2008

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